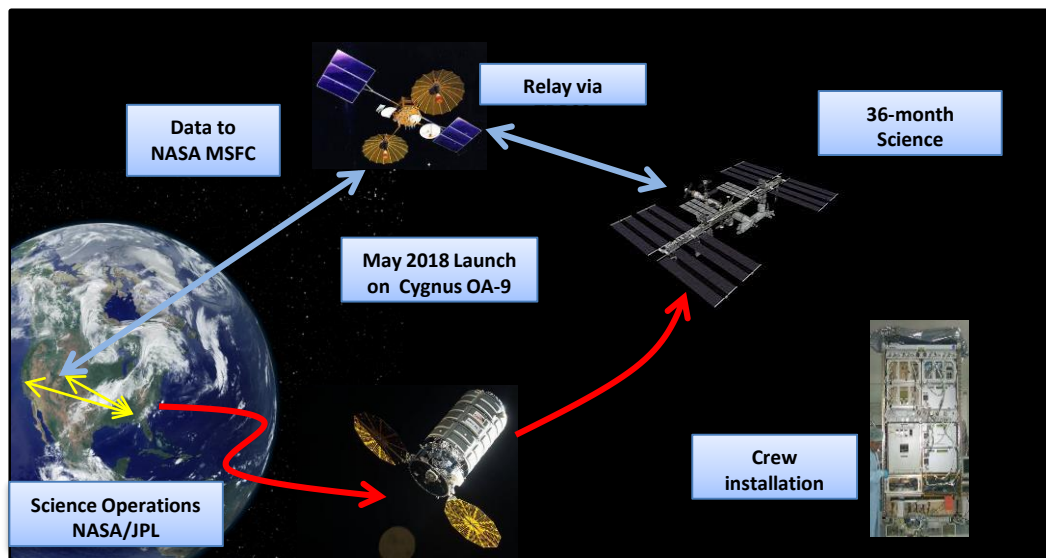
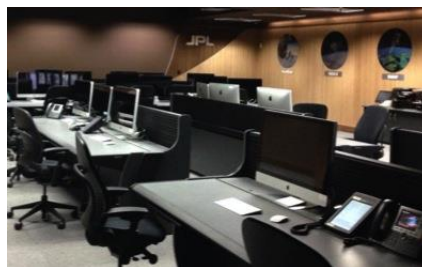


CAL Facility Overview

CAL ISS Utilization



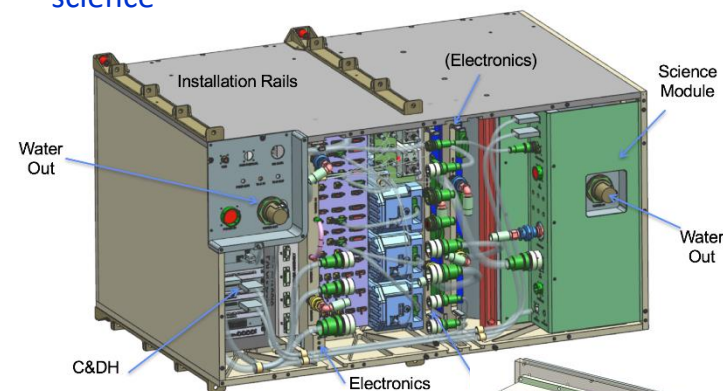
- After docking with ISS the CAL payload will be installed by astronauts into an EXPRESS Rack inside the space station (EXPRESS (EXpedite the PRocessing of EXperiments to Space Station))
- CAL is operated remotely after installation from the JPL Operations Center in concert with ground testbeds



Daily operations will be conducted from a dedicated Mission Ops area

CAL Science Facility

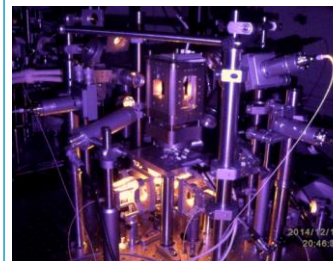
- CAL facility offers Investigators a suite of precision tools to enable a wide variety of science



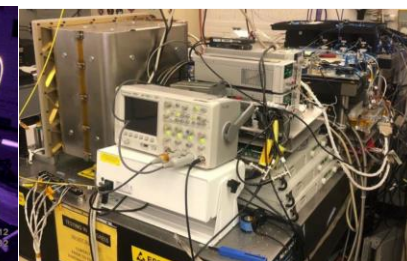
Engineering Model Test Bed

- Instrument & experiment parameter development.
- Science sequence verification.
- In-orbit trouble shooting.

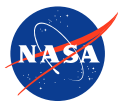
Sliding heat exchanger plates for box level replacement



CAL EM Physics Package

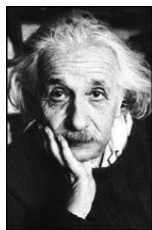


CAL EM Testbed

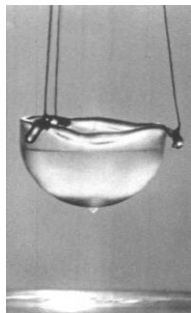


Cold Atom Laboratory (CAL)

The quest for ever-colder temperatures has been an important theme in physics for over a hundred years....



1924-Bose and Einstein develop theory of Bose-Einstein Condensate (BEC)



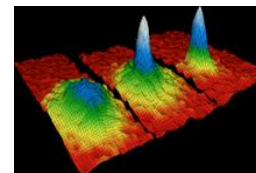
1937-Superfluidity discovered



1980's-Laser cooling developed



1987-High-Temperature Superconductivity



Picture courtesy Eric Cornell

1995-BEC finally observed!



2018-CAL: A new regime of ultra-low temperatures $<100\text{pK}$

How Does CAL Work

Multi step cooling process: Cooling Matter One Atom at a Time

